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# arnoldia

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# arnoldia

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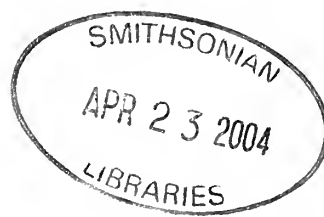
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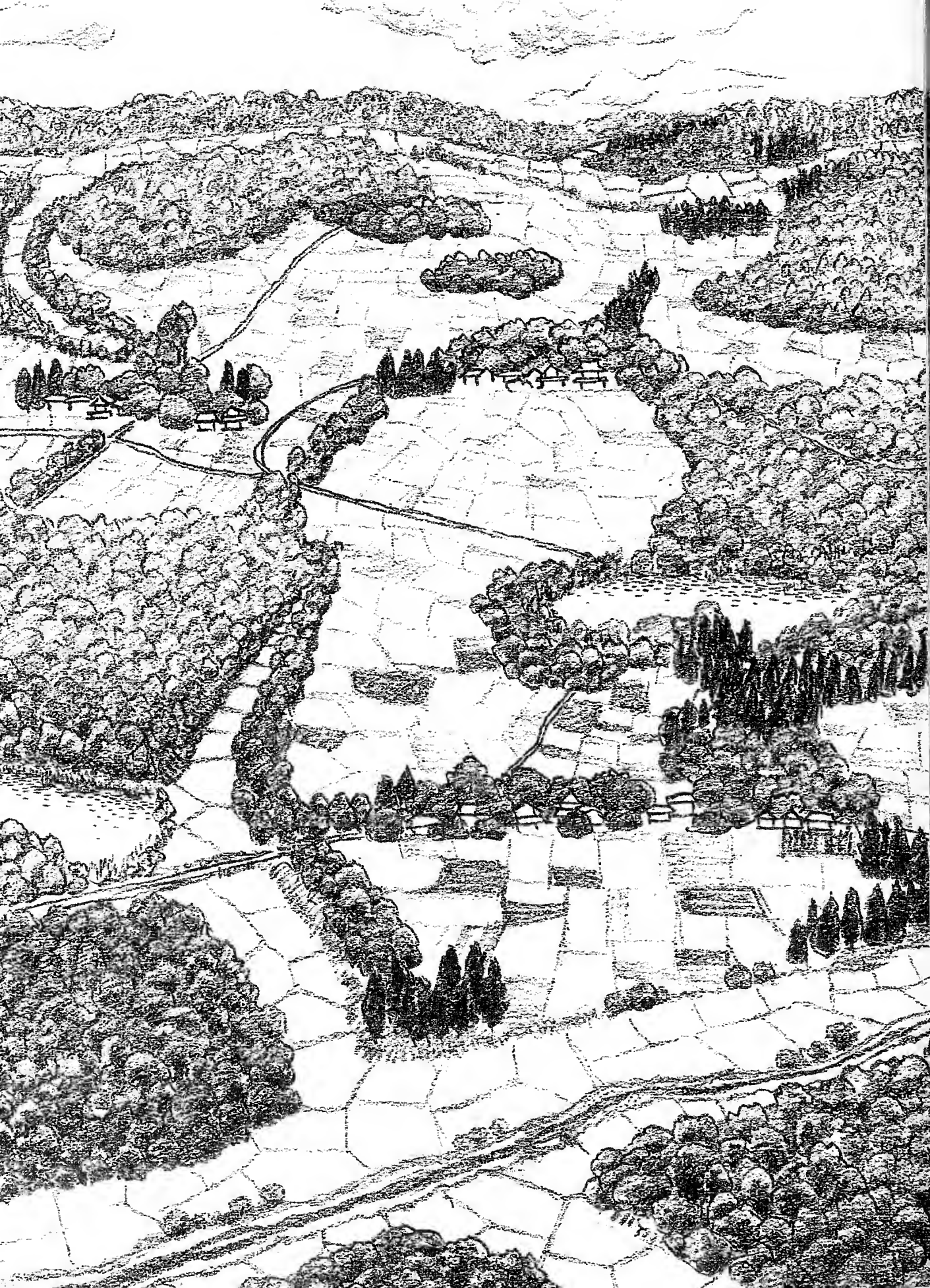
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*Front & back covers:* Beach plums (*Prunus maritima*) grow in coastal grasslands and sand dunes, often less than 100 meters (328 ft) from the ocean. In spring, their white flowers stand out among bayberries (*Myrica pensylvanica*) and eastern red cedar (*Juniperus virginiana*). Photograph of the marsh at Sandy Neck, Barnstable, Massachusetts, by Richard H. Uva

*Inside front cover:* The fruits of *Prunus maritima* are usually purple but they can vary widely in color, ranging from yellow to dark purple. Photograph by Richard H. Uva

*Inside back cover:* The striking color of the leaves of *Parthenocissus tricuspidata* (Boston ivy) 'Fenway Park' varies according to the amount of light they receive, chartreuse in shade and—seen here—yellow in sun. Photograph by Peter Del Tredici





# Conservation for Satoyama, the Traditional Landscape of Japan

*Hiromi Kobori and Richard B. Primack*

Most people associate the notion of conservation and biodiversity with “natural” areas—those that have been minimally affected by human activities. In many parts of the world, however, much species diversity can be found in traditional agricultural landscapes that people have cultivated for hundreds or thousands of years. Japan, for example, is a densely populated archipelago that has experienced the impact of human activities for millennia; it nevertheless has species and ecosystems of great diversity and unique character.

Since ancient times, the Japanese people have respected and preserved the natural resources of their country. The traditional agricultural and forest landscape of Japan, known as *satoyama*, a mosaic of fields, ponds, forests, and villages, enabled this chain of mountainous islands to support not only a large human population but also a great variety of plant and animal species in a sustainable manner. When we see photographs, paintings, and films about the Japanese countryside, we are usually seeing a *satoyama* landscape.

Today, however, the Japanese are struggling to balance rapid economic growth with protection for their rich cultural and natural heritage. Modernization has led to new ways of farming and encouraged urban expansion, together with large-scale civil engineering projects like dam construction and wetland filling. The result has been neglect of *satoyama* landscapes and a reduction of the overall farm area where many species of plants, mammals, reptiles, amphibians, and freshwater fish previously thrived. Twenty percent of these species, many of them significant in Japanese culture, are now under threat of extinction.<sup>1</sup>

Two recent projects have been effective in restoring and protecting *satoyama* landscapes, however, even within densely settled urban areas. Crucial to the projects’ success have been efforts to increase public awareness of the need for conservation and to promote participation by local citizens.

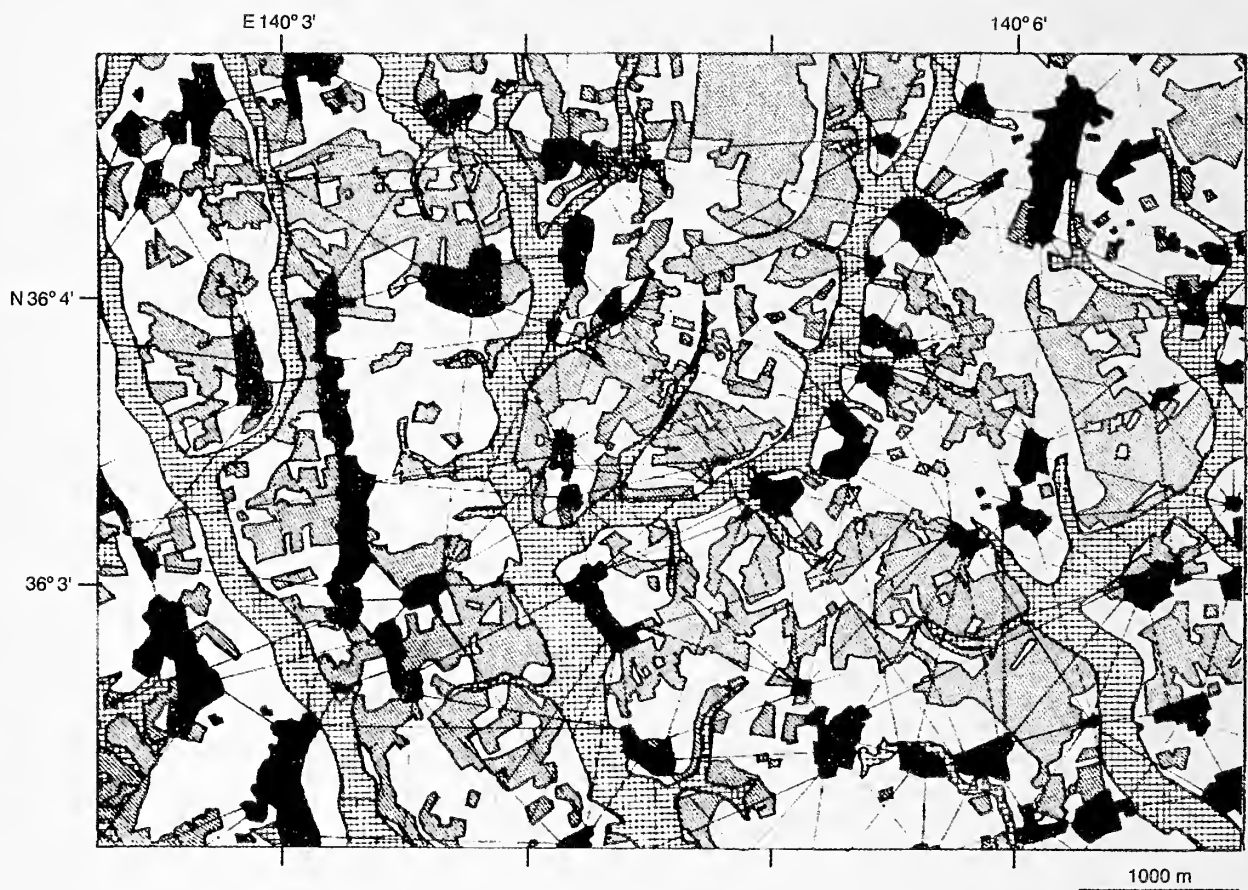
## **Satoyama: What Is It?**

In the broadest sense of the term, *satoyama* is a mixture of forests, wet rice paddies, cultivated fields, pastures, streams, ponds, and irrigation ditches surrounding a Japanese farming village—the entire landscape necessary to supply the needs of a community. In the Edo era (1603–1867), around five hectares (over twelve acres) of *satoyama* landscape was needed to support each farm family of seven or eight persons. The grasslands were maintained for the horses and cattle that served as sources of power. Streams, ponds, and ditches were managed to maintain appropriate water levels in the rice paddies and to supply fish to eat. In a typical *satoyama* community, the rice fields were located next to the village houses, adjacent to the grasslands and the forests, which often formed the boundary with the next village.<sup>2</sup>

The word *satoyama* is sometimes used more narrowly in Japan to designate only the forest component of the traditional landscape. These forests, managed by local agricultural communities, are not wild but have developed through human intervention in natural systems over the centuries. The villagers gathered the leaves of community forests for use as fertilizer in the rice paddies; wood was used for construction and for cooking and heating; and bamboo shoots were collected for food. For each hectare of rice

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*Diagram of typical landscape of satoyama with villages surrounded by paddy fields, dry fields, and forest. From H. Moriyama, 1997, Reviving Nature of Rural Areas.*



Typical land use of satoyama in Kanto district near Tokyo with villages (black); hayfields (white); secondary forests (gray shading); rice paddies (crosshatching). Modified from K. Yamaoka, H. Moriyama, and T. Shigematsu, 1997, in *Bulletin of Toyo University* 20: 373–384.

cultivated, several hectares of community forests were needed.<sup>3</sup> The constant collection of leaves and wood kept the forest open and prevented succession to large trees and dense shade. However, in the late Edo era and in the Meiji era (1868–1912), farmers began to buy commercial fertilizers; when leaves were no longer needed for the rice paddies, management of the forest became less intensive.

### Biodiversity in Satoyama and its Cultural Dependence

As an indirect consequence of the agricultural practices associated with satoyama, these landscapes supported a great diversity of plant and animal species. Their mosaic structure provided a variety of habitat types—ponds, rice paddies, grasslands, forests—and facilitated movement among habitats and from one village satoyama

to the next. Though not “natural” in the usual sense, therefore, the satoyama helped to maintain a rich biodiversity in the Japanese countryside.

Active management of satoyama forests for agricultural purposes, for example, promoted biodiversity by creating open, sunny habitats. In most communities, farmers maintained a mixed forest of deciduous, broadleaf trees, with the most common being Japanese oak (*Quercus serrata*) and Japanese chestnut oak (*Q. acutissima*). The trees were harvested in 15- to 20-year cycles for fuel wood and charcoal. This regular cutting, resprouting, and replanting prevented succession to the densely shaded, evergreen laurel forest—dominated by such species as chinquapin (*Castanopsis sieboldii* in the oak family), red machilus (*Machilus thunbergii* in the laurel family), and Japanese acuba (*Aucuba*

HIROMI KOBORI



HIROMI KOBORI



Landscape of a well-managed satoyama: at top, satoyama forest managed by selective logging creates an open understory suitable for the production of edible bamboo shoots; below, paddy connected to mixed forests.

SUSUMU TAKAKUWA



The giant purple butterfly (*Sasakia charonda*).

*japonica* in the dogwood family)—which, being native to the area in pre-satoyama times, is the usual climax forest in much of Japan. Compared to unmanaged laurel forests, the managed and more open mixed forests supported much more wildlife, much of which is familiar to the Japanese people and important to their culture. The national butterfly, the giant purple butterfly (*Sasakia charonda*), the large horned beetle (*Allomyrina dichotoma*), and the stag beetle (*Dorcus curvidens*) are some of the better-known species that are found in sunny, mixed deciduous forests but are absent in shady laurel forests.

Other beneficiaries of traditional forest management included many species of spring and summer wildflowers that can survive only when the foliage is thin and sunlight is able to reach the forest floor. Since these species cannot push their way through a deep layer of fallen leaves or grow in the darkness of evergreen forest, they are dependent on the traditional practices of collecting fallen leaves for fertilizer and the regular cutting of trees.

In addition, grasslands that were regularly cut for fertilizer, thatching, bedding, or hay provided a rich habitat for wildflower and insect species. When grasslands are not cut, they undergo succession to forest and many species are lost.

And thanks to the requirements for growing rice, satoyama helped preserve wetlands where many aquatic species thrive. The rice paddies themselves comprise half of all freshwater wetlands, and together with the associated ponds and reservoirs, they serve as a crucial habitat for most frogs found in Japan, being used throughout the year by numerous species for mating, egg maturation, larval growth, and adult feeding. Many bird, fish, insect, and mollusk species are also found primarily or even exclusively in the wetlands of the satoyama. In particular, these wetlands provide habitat for insect species that live in water during the early stages of their life cycle; these include fireflies and dragonflies, which are important in Japanese culture and frequently serve as motifs in poetry, painting, textiles, and toys. Since many small- and mid-sized dragonflies can migrate only short distances of a few kilometers, the creation of



networks of ponds and other wetlands for traditional agriculture have favored their survival.<sup>4</sup>

### Loss of the Satoyama and its Biodiversity

Many forces at both the national and international levels have transformed the traditional Japanese landscape over the past several decades. Because of Japan's high cost of labor, its agriculture and forest industries are not able to compete in international markets, making farming less attractive economically, and many farmers have abandoned their satoyama to find jobs in cities. Many satoyama located in urban areas have been converted to residential or industrial uses, with the subsequent loss of natural habitat; the satoyama area in Yokohama, for example, has decreased from 10,000 hectares in 1960 to only 3,000 at present.

Outside urban areas, the decline in the rural population and the aging of the remaining farmers make it physically difficult if not impossible—as well as economically unappealing—to maintain satoyama as a communal village activity. The individual farmers who remain have introduced modern technology to reduce costs and to compensate for the lack of labor, often with financial support from the central government. All components of the satoyama system have suffered from these innovations, but wetlands in particular are rapidly disappearing. One of the programs most favored by farmers, the construction of new irrigation systems, has resulted in the loss or fragmentation of wetland habitat; in addition, farmers have increased their use of herbicides, pesticides, and commercial fertilizers, inadvertently killing off many insect and aquatic species. The “seven autumn wildflowers,” for example—a beloved symbol of nature's beauty and a focus since ancient times for poetic sentiment—are included among the threatened species. Indeed, two of the seven, fujibakama (*Eupatorium fortunei*, a relative of joe-pye-weed in the sunflower family) and kikyo or balloon flower (*Platycodon grandiflorum* in the bellflower family), face almost certain extinction in the wild within the next century. Fujibakama grows on river banks and flood plains and depends on natural and human-caused disturbances such as spring floods and grass cutting for its survival; increased river management for flood control and a decline

in grass cutting by farmers have drastically diminished its numbers. Altogether, 79 of Japan's total of 200 native freshwater aquatic plants are now facing extinction, according to the latest Red List.<sup>5</sup>

Many freshwater fish have also been severely affected by changes in agricultural practices. Among these is the Japanese killifish (*Oryzias latipes*), a species so familiar to the Japanese people that it has more than 5,000 local names, and a folk song about it remains popular among small children. Most Japanese believe that it is still a common fish in satoyama, present in wetlands throughout the country. In reality, however, many wetlands suitable for the killifish have been degraded or entirely wiped out by drainage, reclamation, or other civil engineering projects, a situation made worse by water pollution and invasion by exotic species.

Modernization of agriculture has also had negative consequences for satoyama forests. Coal and oil have replaced wood and charcoal as the primary source of energy, and trees are no longer cut regularly for fuel. As the forests become overgrown and more shaded, many plant and animal species are being lost; forest wildflowers in particular are rapidly declining in abundance.

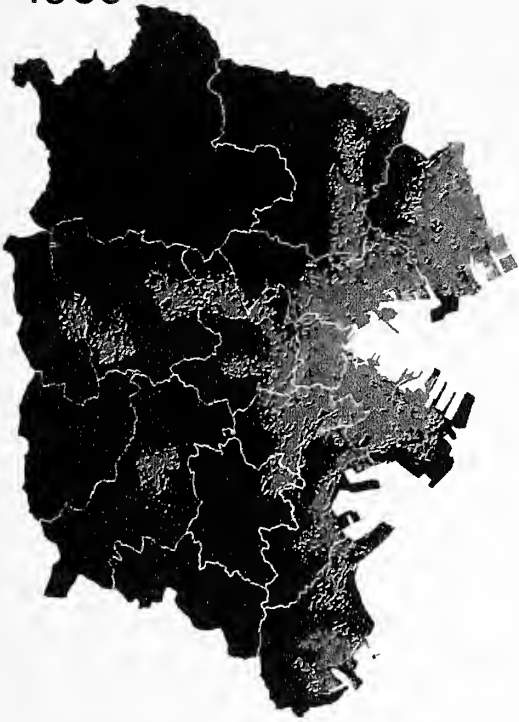
### Satoyama Conservation in Urban Areas: The Tokyo Example

To counter the steady loss of traditional agricultural landscapes and wildlife habitat, the Totoro Hometown Fund Campaign was founded in 1990 as an effort to save areas of satoyama located in the Sayama Hills on the outskirts of Tokyo, in the Saitama Prefecture.<sup>6</sup> Initiated by local residents together with a private environmental organization, the project later received support from the National Environmental Agency and the local government as well.

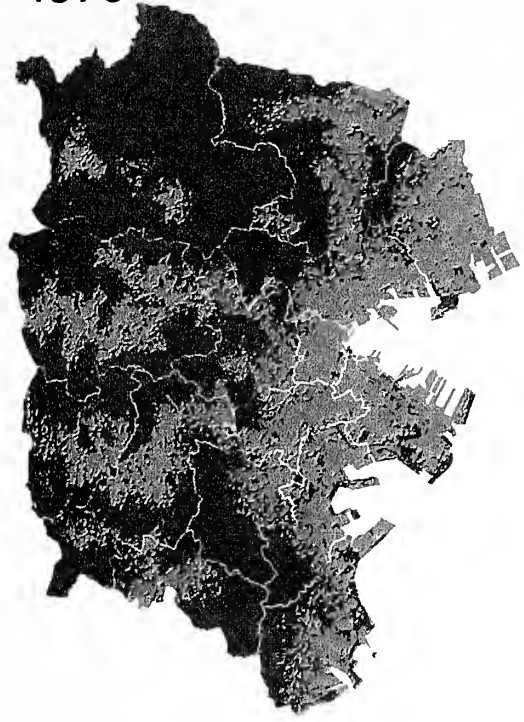
The Sayama Hills, about 3,500 hectares in area, are home to roughly a thousand species of vascular plants, eleven species of mammals, and 210 species of birds. Not only is this small area a remarkable refuge for wildlife, but it is also an important repository of Japan's cultural heritage, with 114 shrines and temples. Humans have occupied the region from the time of the Stone Age, and 235 sites of ancient villages have been found there. Yet without an effective con-



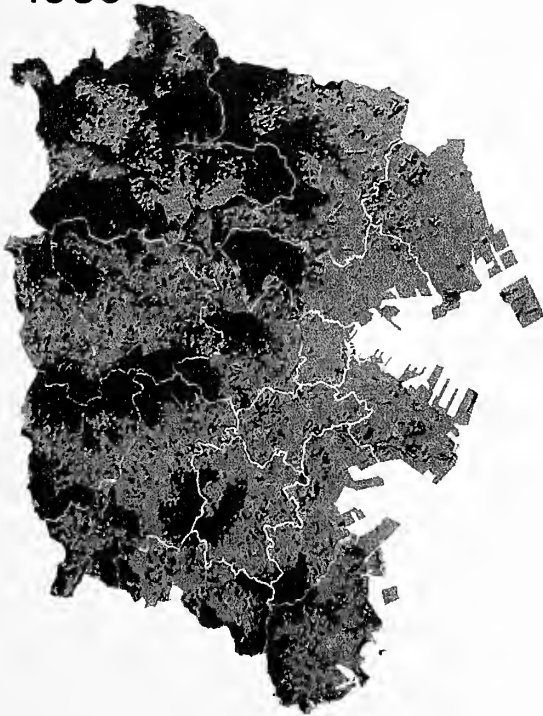
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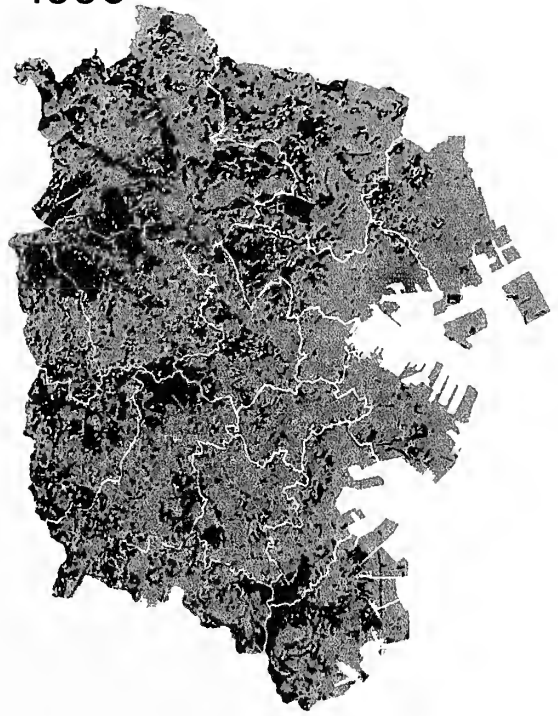
1970



1980



1990



*Conversion of forests, farmlands, and parks (black) to industrial and residential use (light shade) in the metropolitan Yokohama area from 1960 to 1990. The diagrams also show how the natural landscape is increasingly fragmented by development. Each map represents an area of approximately 50 by 65 miles (78 by 105 km). Yokohama City Environmental Protection Bureau.*

トトロの森、狭山丘陵の自然保護

トトロのふるさと財団

**Totoro**

Publicity for the Totoro Hometown Fund Campaign. Totoro attracts many people to support the national trust activities.



この森には、  
まだトトロが  
いるのです。

and harvest rice. Volunteers also planted tree seedlings, mowed grassland, cut trees, and removed undergrowth from the forests. For many city people this was the first opportunity to work on a farm, and they found great satisfaction in reconnecting to the agricultural traditions of their culture.

Third, researchers and local residents worked together to gather information about the area's endangered species as well as about the cultural history of its people

and landscape. And finally, an environmental education program was designed to help Japanese children become familiar with the landscapes and the species that figure so prominently in their culture. The program includes guided tours, watching birds and other wildlife, and seasonal harvest events.

conservation program, the entire area would have been rapidly converted into residential housing, industrial sites, and roads. The campaign used as its mascot "Totoro," the central character from an extremely popular animated film called "Tonari no Totoro" (My Neighbor Totoro). Totoro is an imaginary furry animal, rounded in shape and pleasantly naive in demeanor, that lives in the forests of satoyama, helping children who get into trouble when adults are absent. The movie is set in an imagined time of innocence in the 1950s, when farms, rice fields, and managed forests covered the Sayama Hills—some of the place names used are those of actual sites in the hills—and depicts a simple agricultural community in which villagers work together for the good of all. The movie has served as a powerful focus for the positive feelings of the Japanese toward satoyama and traditional village life.

The project was built around four major activities. During the initial phase, a broad range of people were encouraged to contribute money to buy land for conservation as satoyama. In the first two years of the campaign, 110,000 people—40 percent of them younger than seventeen—donated approximately 110 million yen (equal to one million USD).

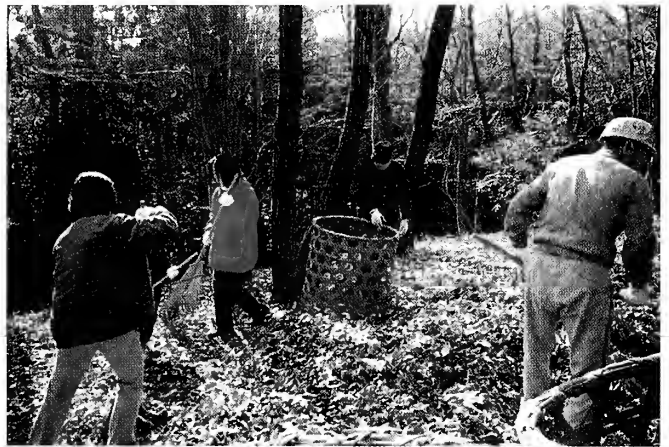
Second, the organization called for volunteers to restore satoyama landscapes with the help of local farmers. A total of two thousand people worked together to rebuild rice paddies and water reservoirs and, later, to cultivate

and landscape. And finally, an environmental education program was designed to help Japanese children become familiar with the landscapes and the species that figure so prominently in their culture. The program includes guided tours, watching birds and other wildlife, and seasonal harvest events.

The key to the success of the Totoro Hometown Fund Campaign has been the combination of energetic citizen involvement along with governmental encouragement and support. Since its inception, the project has been characterized by a strong sense of local control: it is local residents who direct the management and volunteer programs. Municipal and prefectural governments of the region have responded to their efforts by buying additional land surrounding the satoyama trust areas. In addition, both the National Environmental Agency and the government of Saitama Prefecture have launched their own Sayama Hills conservation efforts through such campaigns as "Hometowns in Contact with Traditions and Nature."

### Satoyama Conservation in Urban Areas: The Yokohama Example

Another approach to conserving agricultural landscapes has involved cooperation between volunteers and university researchers. A successful example of this approach can be seen at the Musashi Institute of Technology in Yokohama. In 1997, when a new campus of the Institute's Department of Environmental and



COURTESY OF THE TOTORO FUND ORGANIZATION

Farmers and urban citizens working to conserve and manage the satoyama landscape in Sayama Hills: clockwise from top left, children managing rice paddies in summer; fall rice harvest; collecting fallen leaves in a mixed forest to encourage spring wildflowers; children and adults identifying dragonfly nymphs and removing exotic fish and crayfish.

Information Studies was established on the site of neglected satoyama land, a little more than one hectare of forest was set aside for conservation. The area, which had been abandoned more than thirty years earlier, consisted mostly of deciduous and evergreen trees and a fruit orchard, all overgrown by a dense tangle of vines, bamboo, and weeds.

The forest is now being restored and managed by university researchers with two closely associated objectives. The first is to use the forest for teaching and directing research about satoyama ecology, management, and restoration. Students are able to access data accumulated in past years in order to make comparisons over time.

The second objective is to establish educational links between the university community and the citizens of Yokohama. A group of volunteers that included local citizens, faculty,

students, and university administrators began the restoration project by surveying and inventorying the area's resources. The area was then divided into five zones, each with its own conservation goals and management program. For example, a zone of mixed deciduous broadleaf trees was restored by removing the vines, bamboo clumps, and other plants that covered the entire forest floor. It is now being monitored to document changes in the wildflower community. Just a few years after restoration, many spring wildflowers, such as the orchids *Cymbidium goeringii* and *Cephalanthera falcata*—both widely appreciated for their great beauty—have started to appear, apparently growing from small, suppressed plants or dormant seeds. Another zone is being managed for bamboo, with bamboo poles and edible shoots being harvested in a controlled



*The slipper orchid* *Cypripedium japonicum*.

manner. The bamboo shoots are later used in traditional Japanese recipes at the volunteers' social gatherings.

While this conservation project is very small in area, it has received considerable local support and publicity. Many people living in the vicinity value the project as a local resource for education and recreation and as a point of contact with the university community. The social activities of the project, especially the bamboo shoot meals, are also attractive.

The Musashi project is linked to more widespread conservation efforts undertaken by the Yokohama city government, which has now preserved 1,267 hectares of the city's remaining 3,000 hectares of satoyama wooded areas by designating them as citizens' forests, parks, or reserved areas. The government's efforts, however, have been restricted to setting aside the areas; plans are now being developed to restore and maintain the forests' quality by turning management over to citizen groups and conservation organizations in order to reduce costs to the government and to increase public support for satoyama. The potential for expansion of conservation activities is indicated by a survey showing that 45 percent of Yokohama citizens would be willing to participate in this and similar activities.

### Satoyama Conservation: A Model for Others?

These two programs have shown that traditional satoyama ecosystems can be restored and maintained even within the densely settled urban Japanese landscape if public attention is

directed to the need for conservation and if the projects offer volunteer opportunities that allow citizens to renew their sense of identification with traditional agriculture. Given that the rich biodiversity of traditional agricultural landscapes is being threatened in many parts of the world, these examples may serve to promote conservation efforts in other densely populated, rapidly modernizing parts of the world.

### Notes

This essay draws on the authors' earlier work, which was published in 2003 in *Ambio* 32(4): 307–311, as "Participatory Conservation Approaches for *Satoyama*, the Traditional Forest and Agricultural Landscape of Japan."

- <sup>1</sup> Environment Agency, Government of Japan, 2000, *Quality of the Environment in Japan* (in Japanese).
- <sup>2</sup> K. Yamaoka, H. Moriyama, and T. Shigematsu, 1997, Ecological role of secondary forests in the traditional farming area in Japan, *Bulletin of Toyo University* 20: 373–384 (in Japanese).
- <sup>3</sup> T. Shidei, 1993, *Learning From Forests* (Tokyo: Kaimei Publishing Co. Ltd., in Japanese).
- <sup>4</sup> R. Primack, H. Kobori, and S. Mori, 2000, Dragonfly pond restoration promotes conservation awareness in Japan, *Conservation Biology* 14: 1553–1554; H. Moriyama, 1997, *Reviving Nature of Rural Areas* (Tokyo: Iwanami Publishing Co. Ltd.), p. 4; and *ibid.*, 1998, *Satoyama* as reservoir of fauna and flora, *Landscape Studies* 61: 281–283 (both in Japanese).
- <sup>5</sup> R. Primack and H. Kobori, 1997, *Introduction to Conservation Biology* (Tokyo: Bunichi-Sougou Publishing Co. Ltd.), p. 94; Ministry of the Environment, Government of Japan, 2000, *Threatened Wildlife of Japan, Red Data Book*, 2nd ed. (both in Japanese).
- <sup>6</sup> 1998, Totoro Hometown Foundation News (in Japanese).

Hiromi Kobori is a specialist in marine microbiology, now active in conservation research, river restoration, and environmental education. She is the co-author of a Japanese textbook in conservation biology and is Professor of Environmental and Information Studies, Musashi Institute of Technology, Yokohama.

Richard Primack is Professor of Plant Ecology at Boston University, focusing on rare plants and tropical forests. He is the author of two textbooks in conservation biology, which have been widely translated into other languages. His current research focuses on the impact of climate change on plants, including those at the Arnold Arboretum.



# Taming the Wild Beach Plum

Richard H. Uva

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Beach plum is a conspicuous shrub of coastal plant communities in the northeastern United States because of its prolific bloom, prized fruit, and perseverance in a seemingly hostile environment. Several attempts have been made to bring this wild fruit into cultivation.

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I've known the beach plum (*Prunus maritima* Marsh.) since childhood on Cape Cod, where it was the only woody plant in the sea of dune grass that separated the ocean from the rest of the world. Michael Dirr writes in his *Manual of Cultivated Plants* that "This species abounds on Cape Cod, Massachusetts, and is one of the Cape Codders' cherished plants." In fact, I would say that Cape Codders feel a sense of entitlement to the species and its fruit. The beach plum is much appreciated for its profuse white bloom in spring, but it is in late summer, when people gather the fruit from the wild for jelly and other preserves, that its importance to the local culture becomes most apparent. The long-time gatherers have secret spots and favorite bushes, and strangers carrying pails in the dunes are viewed with suspicion. In a good crop year the race to harvest is so competitive that the fruit is sometimes picked when barely ripe.

In 1996 I began to study *Prunus maritima* for my doctoral dissertation in horticulture at Cornell University. I was fascinated by this long-lived species' ability to thrive in environments with salt, apparent drought, and frequent disturbance, where its neighbors are often short-lived, stress-tolerant herbaceous plants like American beach grass (*Ammophila*



The fruits of *Prunus maritima* are small plums—one-half to an inch (1.5 to 2.5 cm) in diameter—that ripen from late August through September.

*breviligulata*), beach pea (*Lathyrus maritimus*), and seaside goldenrod (*Solidago sempervirens*). When I learned that William Clark of the Cape Cod Cooperative Extension and a small group of farmers in Barnstable County, Massachusetts, were working to bring beach plum into cultivation, I focused on fruit production methods and the ecology of the species, together with its usefulness for land restoration.<sup>1</sup>

Beach plums were noted by several European explorers, conspicuous, perhaps, because of their location along the coast. The earliest account is from Giovanni da Verrazano, who in



White flowers appear in mid May on reddish-brown twigs. They are pollinated by insects.

1524 recorded "damson trees" in what today is southern New York State.<sup>2</sup> Since then, several coastal land masses have been named after the beach plum: Plum Island, a barrier beach and conservation area near Newburyport, Massachusetts; Plum Island, an isolated speck of land off the northeastern tip of Long Island, New York, which is home to the USDA's Plum Island Animal Disease Center; and Prime Hook, a barrier beach in Delaware whose anglicized name is derived from the Dutch settlers' *Pruime Hoek*, which would more correctly translate to Plum Point.

Several species of native plums were used by indigenous people and by settlers across North America.<sup>3</sup> The fruits are cherry-sized plums with a flavor that varies from astringent to relatively sweet when ripe. Plums are rarely eaten raw, but their tartness gives jam and jelly a distinctive taste. Today, jelly production from wild fruit persists as a cultural tradition in coastal communities throughout the species' range,

with hotspots on Cape Cod, eastern Long Island, and at the New Jersey Shore's Island Beach State Park and Cape May. It is also used for dune stabilization and other conservation programs.

### The Extreme Variability of *Prunus maritima*

Plums grow pretty much as they please and the botanist has to take them as he finds them.

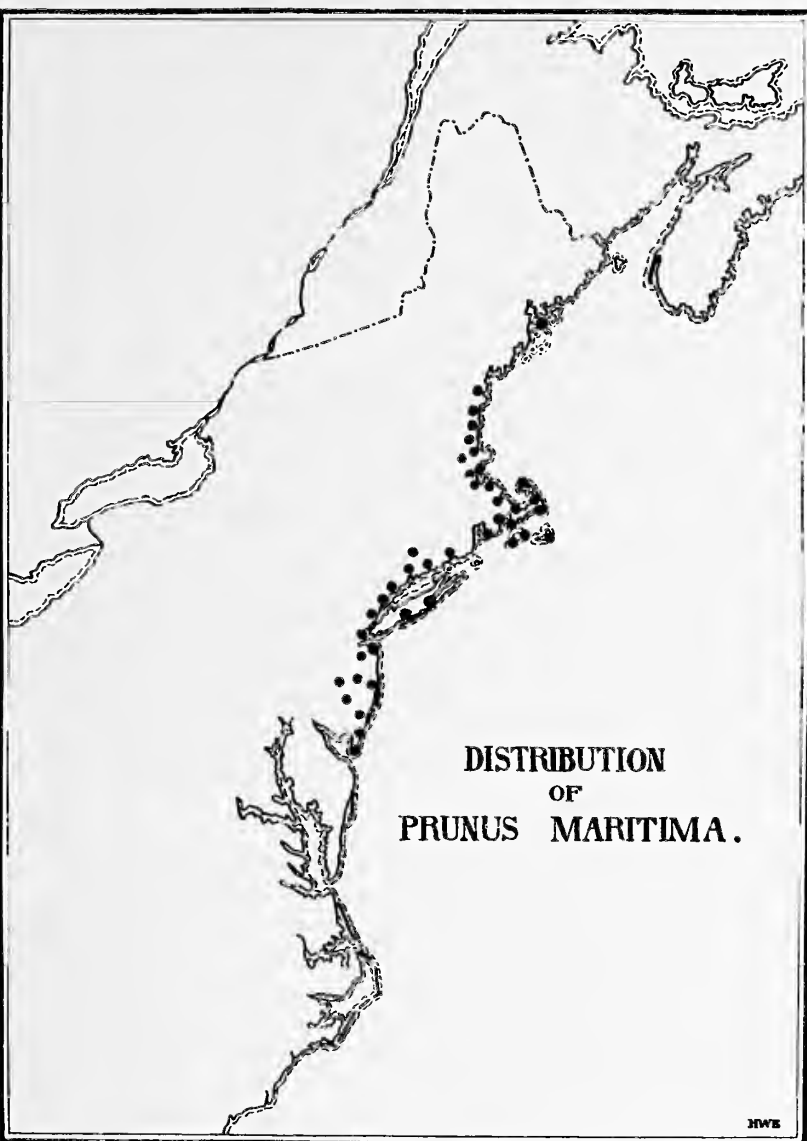
— F. A. Waugh, *Plums and Plum Culture*, 1901

Ever since it was first named in 1785, there has been confusion over whether *Prunus maritima* is indeed a single species, presumably because of its many variations in habit, fruit color, and size. In 1897 J. K. Small described as a new species a specimen that he had discovered in Connecticut, on a ridge near Long Island Sound, and named it *Prunus gravesii* in honor of Charles B. Graves, a Connecticut physician and amateur

botanist.<sup>4</sup> *P. gravesii* still appears as a separate species in manuals today, although Small's was the only individual ever found. Described as having orbiculate rather than the usual lanceolate leaves, it was recently determined to have been a mutant of *P. maritima* and therefore a variety rather than a species.<sup>5</sup>

One early attempt to document the beach plum's many variations in the wild was that of J. M. MacFarlane, who was inspired by reading Darwin's *Animals and Plants Under Domestication* and by the wide variation in fruit quality he had found within individual sites.<sup>6</sup> Later a student of MacFarlane, John Young Pennypacker, drew up an evolutionary hierarchy based on fruit variations, but the nine taxonomic varieties he proposed were never accepted in the horticultural literature.<sup>7</sup>

Edgar Anderson, a geneticist on the staff of the Arnold Arboretum, saw in beach plum variation an opportunity to explore such questions as, is a species more variable at the center of its



*In the wild, beach plums occur only on North America's Atlantic Coast, chiefly in Massachusetts, New York, and New Jersey. This distribution map is from Anderson and Ames' 1932 article in the Arnold Arboretum's Bulletin of Popular Information.*

distribution or at the periphery? Are unusual forms found with greater frequency in one part of its range than in another? Using beach plum as his model, he might even get at one of the core questions of biology: What is a species?

To address these questions Anderson first needed to map the beach plum's range, but after a week of driving around Boston's South Shore he had located few large colonies. To save time, he enlisted Oliver Ames (son of Oakes Ames, then head of the Arboretum) as pilot in order to

map the population from the air in mid May when the prolific, bright-white bloom revealed the species' location. In 1932 Anderson and Ames published "Botanizing from an Airplane" in *The Bulletin of Popular Information*, the forerunner to *Arnoldia*.<sup>8</sup> The article included a detailed map of beach plum distribution, along with the claim that the two authors were the first to map a species' distribution from the air. Any further work that Anderson may have done on variation in beach plum was never published.

#### **Cultivating Beach Plum: Previous Attempts**

Commercial production of native plums began in the 1800s. Over the course of the century, as many as two hundred native species may have been selected for cultivation.<sup>9</sup> More than seventy bulletins devoted wholly or in part to native plums and cherries appeared between 1888 and 1900. Passage in 1897 of the Hatch Act, which funded agricultural experiment stations, led to even more research and more additions to the literature. But no publication influenced the culture of the native species more than the 1892 *Cultivated Native Plums and Cherries* by L. H. Bailey (Wight 1915).<sup>10</sup> F. A. Waugh, U. P. Hedrick, and W. F. Wight also

produced encyclopedic works that appeared early in the twentieth century.<sup>11</sup>

Beach plum, however, was not among the first native plums selected for cultivation, even though its distribution on the East Coast made it better known than plums native to areas settled later. According to Bailey, the beach plum, along with all other species native to the East Coast, was passed over because imported European plums were already thriving there, and little need was seen for "inferior" native



*The shifting sand of coastal dunes often partially buries the plants.*

species. Improvement of native plums began only when the population of the country spread into climates such as that of the prairie states and the South, where old-world plums could not survive.<sup>12</sup>

The first sign of interest in beach plum as a cultivated crop dates to 1872, when an article in *American Agriculturist* displayed an illustration of beach plum and noted its potential for hybridization.

Our principal object in calling attention to this plum is the promise it holds out of being useful as a stock on which to bud or graft the cultivated varieties . . . it would flourish upon the poorest soils and it is very likely that it would prove a dwarfing stock.<sup>13</sup>

In that same year, the first cultivar of beach plum was introduced: 'Bassett's American', a chance seedling with large fruit found in Hammonton, New Jersey; it seems to have been largely ignored by both planters and horticulturists.

But it wasn't until the 1890s, when Luther Burbank began to hybridize them with Japanese plums, that serious work was done on beach

plum as a potential commercial product. Burbank had moved to California in 1875 from Worcester County, Massachusetts, and established a nursery in Santa Rosa, where he went on to become a famous horticulturist and plant breeder. He described his work with beach plum in his 1914 book, *How Plants Are Trained to Work for Man*, attributing his interest in the species to its hardiness, late blooming, and productivity, as well as its ability to withstand adverse conditions. He reported that he grew beach plum seedlings by the hundred thousand and by continuous selection had produced varieties bearing fruits nearly an inch in diameter, pleasing in form and color and delicious in flavor. He crossed his improved varieties with a hybrid Japanese plum to produce what he called the 'Giant Maritima' and reported fruit up to eight-and-one-quarter inches in circumference. Unfortunately, 'Giant Maritima' could not be commercialized—it lacked the firmness necessary for long-distance transport. It was by crossing the Japanese *Prunus salicina* with the Chinese *P. simonii* and *P. americana* that Burbank achieved a plum with the qualities



required for shipping, thereby initiating a new industry in California that sent plums all around the world and led to the demise of plum growing in most other states.<sup>14</sup>

The second attempt to commercialize beach plum was initiated in the 1930s in hopes of adding "a drop in the dry old bucket of New England industry," in the words of one beach plum enthusiast, Ruth Eldridge White. She summered on Martha's Vineyard and had observed the success of the cranberry industry on the Massachusetts mainland and wanted to see a similar industry evolve from the beach plum on the Vineyard, where bad economic times had already led to an increase in the number of people selling jelly from wild beach plum.

The development of an industry from this native product seemed a sensible practical idea to me. A great industry had been developed on the Cape through the Cranberry . . . Why shouldn't the beach plum make as important an industry as the cranberry? The flavor is certainly more appealing. That sweet bitterness comes from a life of hardship, I guess.<sup>15</sup>

After unsuccessful attempts to persuade government agencies (the Massachusetts Department of Agriculture, the Commissioner of Conservation, the WPA, and the County Commissioners) to promote beach plum as a crop, White purchased a farm on the Vineyard's shore and leased it to Dukes County for a beach plum nursery to be operated under the aegis of the State Extension Service. Wilfrid Wheeler of Falmouth, Massachusetts, a former state commissioner of agriculture, was installed as director, and planting began in 1938.

In 1941 White obtained funds for beach plum research from the Massachusetts legislature, and soon thereafter reports began appearing in horticultural journals on propagation;<sup>16</sup> on culture;<sup>17</sup> on processing;<sup>18</sup> and on the history of the species itself.<sup>19</sup>

Interest in beach plum was further spurred by the James R. Jewett Prize, established in 1940 at the Arnold Arboretum for research on the species. Jewett, a professor emeritus of Arabic at Harvard University, had become involved with beach plum after learning about it that spring from three men in the region who had experience with the species: Wilfrid Wheeler, the



OFFICERS' TRAINING SCHOOL  
ARMY AIR FORCES, ARMY OF THE UNITED STATES  
MIAMI BEACH, FLORIDA

August 29, 1942

Dr. E. A. Merrill,  
Arnold Arboretum,  
Jamaica Plain, Mass.

Dear Dr. Merrill:

I was overwhelmed by the receipt  
of the James R. Jewett Prize for the  
year of 1942.

I trust that when world peace once  
again prevails that it will be possible  
to continue my much unfinished  
research on the development of the  
beach plum as a rugged, season-resistant,  
woody crop for suitable lands of the  
Northern United States.

Thanking you and the committee  
for this award and please extend my  
sincere gratitude to Prof. Jewett,

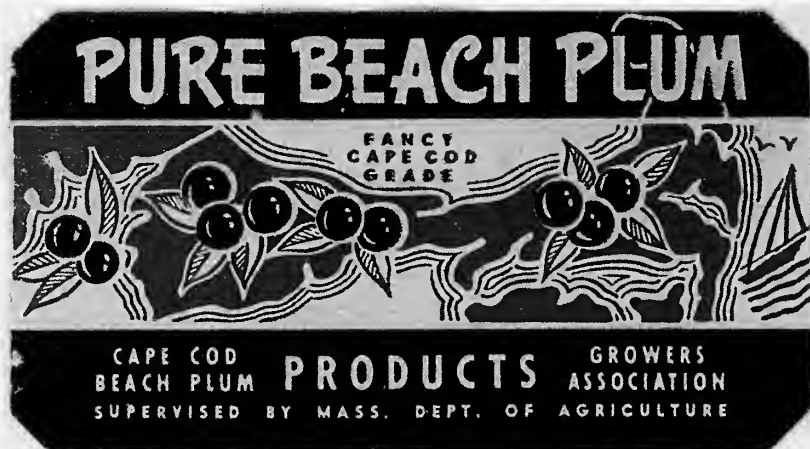
Very truly yours,  
Jackson M. Batchelor,  
Lt., Army Air Forces

During wartime J. M. Batchelor accepted the James R. Jewett Prize for his work on beach plum at the USDA Soil Conservation Service.

director of the new nursery on Martha's Vineyard; Bertram Tomlinson, county agricultural agent for Barnstable County, Massachusetts; and Jackson M. Batchelor, associate horticulturist in the Soil Conservation Service of the United States Department of Agriculture. Jewett hoped to

render good service to Cape Cod by working for the development of the beach plum industry . . . these prizes [are to] be offered primarily for the scientific and empirical improvement of the beach plum (*Prunus maritima*), including however, the social significance of work with this native species or its products.<sup>20</sup>

The Jewett Prize was awarded regularly throughout the 1940s and early 1950s but was then suspended for some time because of waning interest in the plant. (In 1972 it was awarded



*In 1952—to protect identity and guarantee quality—the Cape Cod Beach Plum Growers Association obtained a Massachusetts Department of Agriculture state grade label for their products.*

for work done on other native fruits—a stipulation Jewett originally included on advice of Arboretum staff.)

Jewett's tutors had already done substantial research on beach plum. Batchelor had selected ten beach plum genotypes from collections throughout its range and distributed five of them to the Arnold Arboretum and other institutions to evaluate for erosion control and fruit quality when World War II interrupted his work. Nevertheless, after receiving the Jewett Prize in 1942 Batchelor wrote to E. D. Merrill, Arnold professor and director of the Arnold Arboretum, from the Air Force Officers' Training School:

I trust that when world peace once again prevails that it will be possible to continue my much unfinished research on the development of the beach plum as a rugged, erosion-resistant, woody crop for erodible lands of the Northern United States.<sup>21</sup>

Another of Jewett's advisors, Tomlinson, had assembled information on the species in 1938 and passed it on to hundreds of residents in the Cape Cod area. In 1941 he reported that he had received over 500 requests for information about beach plum—more requests over the past twelve months than for any other crop. Tomlinson was nevertheless cautious about promoting commercial beach plum cultivation to growers. In a letter to Merrill, he wrote: "I have consistently discouraged such projects,

as I feel the research work has not progressed far enough to give us practical information the commercial grower would need." His request that more research be done on beach plum by the state experimental facility was refused because of limited funds. However, Tomlinson began forming the Cape Cod Beach Plum Growers Association with a group of fruit collectors, jelly makers, and farmers. An initial meeting was held in October 1941, but interest in beach plum was soon overshadowed by the need to concentrate on standard crops during the war and the new organization

did not officially form until 1948. By 1952 the Association had over ninety members, and the Massachusetts Department of Agriculture had granted a state grade label as an assurance of product quality for beach plum fruit. By 1955, however, after three poor crop years, interest had waned again and the Association became inactive.<sup>22</sup> In its last bulletin, the association reported that beach plum suppliers had not been able to satisfy market demand because rapid land development was taking "good beach plum land" away from pickers.<sup>23</sup> Apparently most fruit was still being collected from the wild, with very few beach plum plants under cultivation.<sup>24</sup>

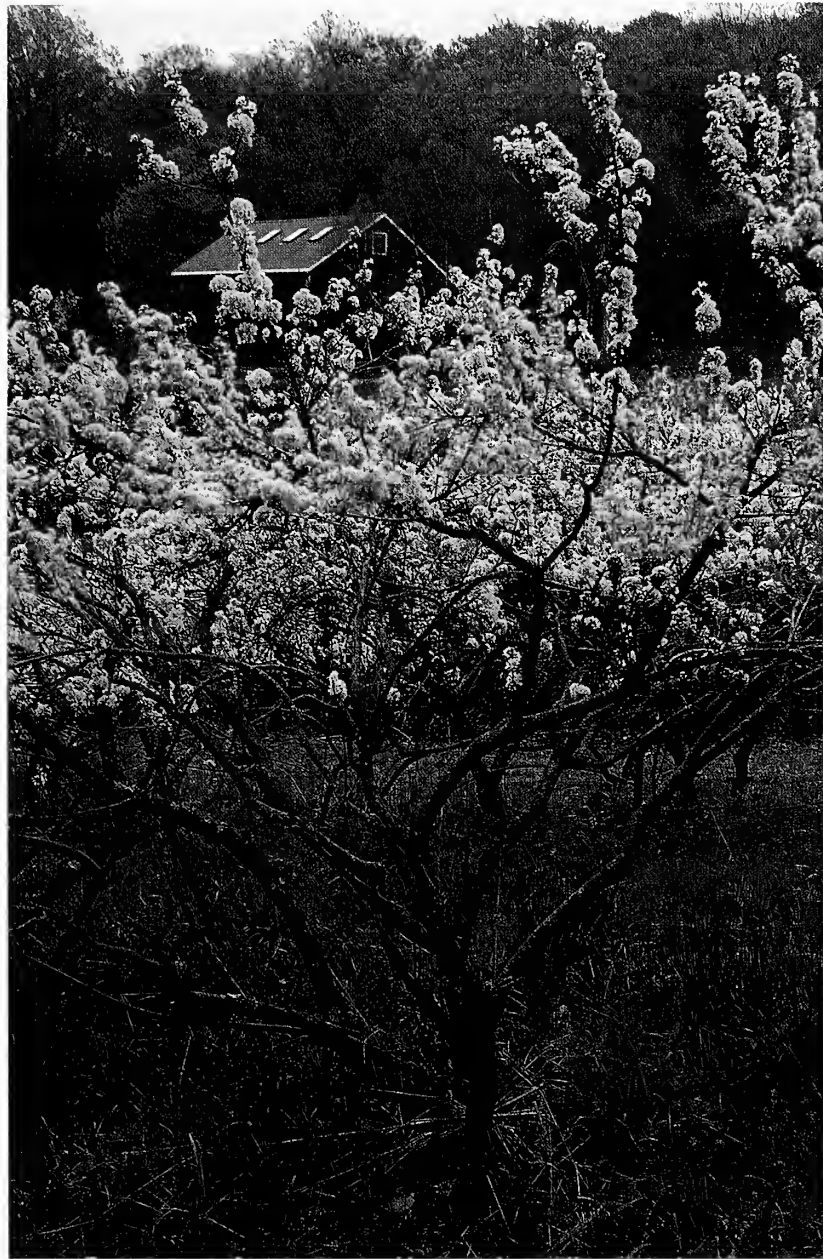
### **Cultivating Beach Plum: The Current Efforts**

To the student, our native and domestic plum flora will long remain the most inviting, perplexed and virgin field in American pomology.

— L. H. Bailey, 1898, *The Evolution of Our Native Fruits*

In 1997 I received funding from the Jewett Fund for work on my dissertation, done under the direction of Thomas Whitlow at Cornell University. That research has since been expanded into a full-fledged program led by Professor Whitlow and myself to develop this species as a commercial crop.

Today, plenty of plums are produced in California and cultivation of native American selec-



A 20-year-old beach plum in a mature orchard at Briermere Farms, Riverhead, Long Island.

tions has nearly ceased. So why develop beach plum as a new crop?

The increased income enjoyed by consumers in the second half of the twentieth century brought changes in the way they view food, using it to satisfy not only their hunger, but also their emotional and social needs. Beach plum fits with this view because it is seen as a unique product—a heritage crop that comes from a

special place by the shore. To be competitive, farmers in the Northeast need to supply this kind of high-end crop, and we believe that beach plum can develop into a specialty product suitable for diversified farming operations.

The goal of our program, then, is to develop a sustainable beach plum industry that covers the gamut from fruit growing to processing to marketing, along with the required education of growers, processors, and marketers. The research falls into three main categories: fruit production; quality evaluation and processing; and economics and marketing.

Our research so far has borne out our optimism about the potential for this new industry. Horticultural research has shown that plant size and fruit production are increased by fertilization, while irrigation and mulch have no effect; this finding confirms that beach plum is a stress-tolerant crop that can be grown successfully without irrigation, even on sandy, low-nutrient soils. (Beach plum also flourishes away from the shore, on typical orchard soil, but good drainage is a must.) Brown rot fungus (*Monilinia* sp.) was found to be the most serious disease problem for fruit production. Growers can be reluctant to accept a new crop if pest control practices are not well developed. Fortunately, however, beach plum's pests are similar to those

of commercial plums and control techniques are already available.

Preliminary market research on processed products has also had favorable results. In focus group discussions held in New York City, beach plum products evoked positive associations with beaches, New England, Cape Cod, vacations, and summertime and indicated that at least among gourmet consumers in coastal

**BEACH PLUM, *Prunus maritima* Marsh.**  
**Rosaceae (Rose Family)**

**ORIGIN**

Northeast U.S. coastal sand dunes

**HABIT**

Sprawling shrub to small tree, with a large tap-root system on coarse soils

**CULTURE**

Tolerates coarse, low-nutrient, low water-holding soil; thrives on rich soil but not on wet sites or in shade

**INTEREST**

Profuse white bloom mid May. Edible fruits (1.5–2.5 cm), purple (rarely yellow), ripening in early September in the northeastern U.S.

**HARDINESS**

USDA plant hardiness zones 4–7 reported

**PROPAGATION**

Four months' cold, moist stratification after seed is hydrated, softwood cuttings early in the season or late-summer budding.

**SIMILAR SPECIES**

Several species of plum are distributed across North America and have a similar history of wild collection. *Prunus subcordata*, Oregon and California; *P. americana*, central and eastern U.S.; *P. angustifolia*, southern U.S.; *P. nigra*, northern U.S. and Canada.

critical factor, since cold, wet weather can inhibit pollinating insects. Or beach plum's pattern of alternate-year bearing (biennial bearing) may be at fault. This term is used for a phenomenon common in many perennial fruit species in which flower buds for the following spring develop as the current year's fruit is ripening; a heavy fruit set during one year can therefore lead to a carbohydrate shortage and fruit scarcity the next year. It is hoped that when beach plum is grown under cultivation, away from the rigors of the dune environment and with adequate nutrition and pruning to avoid unusually heavy crops, yields will become more regular.

The program is also placing heavy emphasis on cultivar selection. Wild fruit has been sampled throughout the species' range to delineate the desirable traits available for selection in this highly variable species. Fruit color in our samples has shown differences in intensity and in hue (red to dark blue, rarely yellow). Fruit size has ranged from 13.5 to 25 mm in diameter, with pulp yield varying from 81 to 91 percent. All samples were high in phenolic content and acidity and showed good potential as a source of antioxidants.

Wild seed from 21 sites across the species' range was also collected to screen for variations in resistance to brown rot, consistency of yield, and

level of antioxidant content. In the spring of 2003, these seeds were planted in trial plots at research facilities and on private farms in Massachusetts, New York, Connecticut, and Maryland. We would also like to include in our evaluations some cultivars from the 1940s that are mentioned in the literature of that time, but I have been unable to locate many of them. If a reader knows of the existence of any of this material, I would appreciate hearing about it.

Once horticultural trials are finished, reliable techniques for cloning our final selections will be needed. Keith Vanderhye, who received the Jewett Award in August of 2003, has begun tack-

metropolitan areas, potential exists for expanding into new product categories such as sauces, sorbet, ice cream, and blends with other fruits.

Market research is continuing and a beach plum consortium is being developed under the sponsorship of the USDA's Sustainable Agriculture Research and Education Program (SARE). One important question that remains to be answered concerns beach plum's tendency to bear irregular fruit yields: can it be controlled? As noted earlier, a wild beach plum may fruit profusely one year and not at all the next. Various hypotheses have been proposed to explain this. The weather at blossoming time may be a



ling this problem under the direction of Kenneth Mudge as part of his work for a master's degree at Cornell University; he will investigate both vegetative propagation and grafting.

It is obvious that we have not yet solved all the problems associated with commercializing beach plum, but successful orchards have already been established and approximately forty farms are growing beach plum in the eastern United States. Individual plantings are relatively small, the largest being 0.5 hectares and the smallest having only ten to fifteen plants. In addition, the Cape May Plant Materials Center (Natural Resources Conservation Service) has released a cultivar of beach plum known as 'Ocean View' that was selected for coastal sand dune stabilization and is being distributed as open-pollinated seed to nurserymen.

Readers are invited to visit our website ([www.beachplum.cornell.edu](http://www.beachplum.cornell.edu)), which serves as our primary outreach tool and is intended to bring together everyone with an interest in beach plum. It includes photos, contacts, reports, a grower's guide, and news articles.

## Notes

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- <sup>11</sup> Waugh. 1901. *Plums and Plum Culture*; Hedrick. 1911. *Plums of New York*; Wight. 1915.
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- <sup>13</sup> 1872. The beach or sand plum. *American Agriculturist* 31: 424.
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- <sup>17</sup> J. S. Bailey. 1944. The beach plum in Massachusetts. *Massachusetts Agricultural Experiment Station Bulletin* No. 422.
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- <sup>19</sup> Graves. 1944. The beach plum, its written record. *The National Horticultural Magazine* April: 73-79.
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# The Native Plant Enthusiasm: Ecological Panacea or Xenophobia?

*Gert Gröning and Joachim Wolschke-Bulmahn*

Over the last two decades, landscape designers have tended to avoid the use of plants that are labeled exotic, or non-native. Many professionals and laypeople who are interested in nature, landscape, and gardens assume that what they believe are indigenous, or native, plants are unquestionably better than those that are not.

A number of years ago (1986) Reinhard Witt, a German biologist and advocate of "nature gardens," published an article entitled "Tear the rhododendrons out!" Witt demanded the liberation of gardens in Germany from foreign trees and shrubs, especially rhododendrons. Similarly, Leslie Sauer, an American landscape architect, wrote that only the North Woods area of New York's Central Park was "healthy" since it was free of exotic plants; she rated other parts of Central Park as "degraded areas." This hostility toward foreign plants appears to be a phenomenon in many countries around the world.

The distinction between native and nonnative plants has a long history; it may be as old as concepts of nations and of native and foreign people. For example, in 1629 the Englishman John Parkinson published his book *Paradisi in sole paradisus terrestris*. Parkinson presented plants "that are called usually English flowers" and "outlandish flowers" in a remarkably unbiased way. He knew already that

those flowers that have been usually planted in former times in Gardens of this Kingdom . . . have by time and custome attained the name of English flowers, although the most of them were never naturall of this our Land, but brought in from other countries at one time or other, by those that tooke pleasure in them where they first saw them.

Although there are a few studies along similar lines published in the late twentieth century, this historical knowledge of how foreign plants

became native seems to have faded. Not long ago the late Stephen Jay Gould offered a fascinating discussion of the concept of native plants: "this notion encompasses a remarkable mixture of sound biology, invalid ideas, false extensions, ethical implications, and political usages both intended and unanticipated." Natives, according to Gould,

are only those organisms that first happened to gain and keep a footing . . . In this context, the only conceivable rationale for the moral or practical superiority of "natives" (read first-comers) must lie in a romanticized notion that old inhabitants learn to live in ecological harmony with surroundings, while later interlopers tend to be exploiters. But this notion, however popular among "new agers," must be dismissed as romantic drivel.<sup>1</sup>

Those who doctrinarily plead for native plants often also condemn foreign or exotic plants as aggressive intruders, thus suggesting that native plants are peaceful and noninvasive. Numerous publications give evidence of this biased viewpoint. In an article "Wildflowers: the case for native plants," for example, it is stated that some nonnative, naturalized wildflower species in the United States exhibit "aggressive, weedy behavior." Characterizations such as "invasive exotic weeds," "non-indigenous invasive weeds," "exotic species invasions," and "foreign invaders" are common.

Advocates of native-plant use tend to ascribe high moral qualities to themselves and to their followers. An essential part of this realm of moral qualities is the idea of the nation. This idea developed in the Western world in the course of the nineteenth and twentieth centuries at the same time as disciplines such as plant geography, plant ecology, and plant sociology were being established. At the beginning, scholars in these disciplines were internationally



*"Valley in Somersetshire, with Narcissi, Marsh Marigolds, and Primroses" from William Robinson's The Wild Garden, 1883.*

oriented. However, by the late nineteenth and early twentieth centuries some of their writing turned increasingly nationalistic. This article explores examples of this nationalistic ideology in landscape design in two countries, Germany and the United States, focusing in particular on points of connection between their national landscape cultures.

### The Doctrine of Natural Plant Use in Germany

From the seventeenth century onward, there was an interest, both scholarly and lay, in the cultivation of plants from other countries. However, this interest faded in the early part of the twentieth century. For example, since the early nineteenth century, many "foreign" trees had been planted in Herrenkrugwiesen, a park near Magdeburg, Germany, for scholarly rather than merely design interest. In the early 1900s, however, it was decided that the park should be changed to a meadow-park, and public pressure forced the then garden director, Wilhelm Lincke (1866–1912), to remove already-planted "foreigners."

With regard to the actual design of parks and gardens in Germany, such public pressure was not predominant, but it can be seen as an aspect of a reactionary national ideology that would soon dominate German society. Similar trends might be seen in other industrial countries in the late nineteenth and early twentieth centuries, at the high point of imperialism. In England, for instance, William Robinson and others searched for the truly English garden. In France, André Vera was looking for the truly French garden. In the United States, as we will see later, Jens Jensen, Wilhelm Miller, and Frank A. Waugh tried to pull away from the garden design of the Old World in order to establish a genuinely American garden style clearly distinguished from the European. Only in Germany, however, did this interest become part of a radical nationalistic movement that emerged in the early twentieth century. It was enforced when, in January 1933, the National Socialist German Workers' Party came to power. Then, a nationalistic antagonism toward anything foreign and nonGerman, which had been common in factions of German society, turned into a powerful public movement.



*Nature garden motifs by Willy Lange. Above, from Lange's Gartengestaltung der Neuzeit, 1907 and 1928, and on the facing page, from his Der Garten und seine Bepflanzung, Das Leben der Pflanze, 1913.*

In the early twentieth century, modern German garden design followed trends in architecture and the arts. New ways of aesthetic expression as well as new forms of social life were being explored. Many people attempted to escape what were perceived as outdated, late-nineteenth-century customs. The new approach was associated with, for instance, Cubism, Expressionism, and Functionalism, which to some extent found their way into garden design. In reaction to that modern aesthetic, others advocated the modern concepts of "natural" garden design and claimed to apply the most recent scientific findings of ecology and plant sociology. In 1913 Willy Lange (1864–1941) presented such an approach in landscape architecture.<sup>2</sup>

Lange's "biological aesthetic" was modern in the sense that it applied science to design. But from a social perspective it was reactionary, promoting dubious ideas about the assumed relationship between the German people and nature and provoking within particular groups hostility





toward the "international" by excluding foreign plants. The emerging science of ecology was the instrument for this naturalistic trend in garden design, which depended on the notion of natural associations of plants. The starting point for ecology as "a definite science" was the publication in 1895 of *Ecology of Plants: an introduction to the study of plant communities* by the Danish scientist Eugen Warming (1841–1924), subsequently translated into German and English.

Around 1900 the term *plant sociology* was coined and was most influentially developed by Josias Braun-Blanquet, who published his book *Plant Sociology: the study of plant communities* in 1928. In this book he popularized the doctrine of plant sociology and defined its subject as follows: "Every natural aggregation of plants is the product of definite conditions, present and past, and can exist only when these conditions are given. The whole structure of plant sociology rests upon this idea of sociological determination." Braun-Blanquet maintained that sociology and plant sociology "have one important point of contact: they are concerned not with the expression of life of the individual organism as such but with groups or communities of organisms having more or less equivalent reactions, bound together in mutual dependence."

The ideology of "blood and soil" was taking hold in Germany in a context of increasing racism and nationalism in Europe, and the doctrine of plant sociology fascinated many a landscape architect. As we shall see later, American

landscape architects such as Jens Jensen also saw analogies between associations of plants and human society. For example, Jensen believed that plants communicate and associate like humans. In 1939 he wrote to a German colleague, "Plants, like ourselves, group together and have their likes and dislikes."<sup>3</sup>

For the German landscape architect Willy Lange, writing in 1928, a "nature garden" would have an informal rather than a geometric or architectural design. Native plants would be preferred

to foreign ones.<sup>4</sup> Moreover, the garden had to be subordinated to the surrounding landscape. Lange considered the centuries-old art of topiary as evidence of human hegemony over nature. For him, cutting trees, shrubs, and hedges was a form of anthropocentric dominance over nature and an expression of the unnatural attitudes of other cultures that were at lower stages of cultural evolution. Instead, humans should follow and augment the so-called laws of nature spiritually, arranging nature artistically in the form of the nature garden.

For a "true" German in those days, culture could only be national culture.<sup>5</sup> Consequently Lange saw garden art as a constituent of national culture. He strongly rejected the idea that "art could be international" and proclaimed: "Let us find the national style for our gardens, then we will have art, German garden art. As long as different nations exist, there must exist different national styles." Lange's idea of nationality assumed that there was a ranking of cultures: for him the superiority of the German people was part of their national identity. For Lange, the German people were rooted in the soil, and every German required and deserved an appropriate natural-spatial environment. In 1907 he wrote:

Our feelings for our homeland should be rooted in the character of domestic landscapes; therefore it is German nature that must provide all ideas for the design of gardens. They can be heightened by artistic means, but we must not give up the German physiognomy. Thus, our gardens become German if the ideas for the



In July 1932 Seifert recommended these natives of Germany's mountain forests to the readers of *Gartenschönheit*, writing, "We have no overabundance of summer-blooming perennials for the rock garden. It is amazing that such an attractive and easy-to-care-for little herb like *Circaea* [enchanter's nightshade] is so little known."

design are German, especially if they are borrowed from the landscape in which the garden is located.

Such a view was popular not only during the Imperial Reich in Germany, but continued through the Weimar Republic and became part of the state doctrine during National Socialism.

Given the variety of what could have been regarded as landscape in Germany, we might expect Lange to have suggested a matching number of natural garden designs. However, he believed three types to be sufficient for all German natural garden design: a "mountain," a "middle," and a "plains" landscape. The American landscape architect Frank A. Waugh (1869–1943), who had studied garden design with Lange in 1910 at the institution for teaching and research in horticulture (*Gärtnerlehranstalt*) in Berlin-Dahlem, similarly distinguished for the United States just four "principal types of native landscapes: the sea landscape, the mountains, the plains, and the forests." As a result of this narrow range of recognized landscapes, nature garden advocates such as the German Alwin Seifert (1892–1972) felt they had to work with a "fate-determined poverty of plants" in a "nature garden."

In 1929 Seifert used the term "rootedness in the soil" for his concept of a natural garden design in two articles published in *Die Gartenkunst* (Garden Art). Such a garden was

intended to strengthen a nationally oriented culture against modern and international tendencies in the arts. Seifert deliberately introduced the "rootedness" category into the art of gardening because he "wanted to bring garden art into the struggle in all living spaces which has broken out in our days between 'rootedness in the soil' and 'supranationality.'" Later, when Seifert became one of the leading landscape architects of National Socialism, he elaborated on this struggle as "a fight between two opposing Weltanschauungen: on one side the striving for supranationality, for leveling down of huge areas, and on the other the elaboration of the peculiarities of small living spaces, emphasizing that which is rooted in the soil." Seifert

echoed Lange, who in 1907 had praised the "rediscovery of so-called folk art; the stressing of one's own folk character—in opposition to the glorification of the international, in reality non-national."

During National Socialism, the subordination of the design to the dictates of what were then considered national landscapes and native plants turned into a doctrine. Racist, nationalistic, and so-called ecological vocabulary served landscape architects in their attempts to eliminate foreign plants from German soil. For example, in 1936 the German landscape architect Albert Krämer argued that the Germans

still lack gardens that are race-specific, that have their origins in nationality and landscape, in blood and soil. Only our knowledge of the laws of the blood, and the spiritually inherited property and our knowledge of the conditions of the home soil and its plant world (plant sociology) enable and oblige us to design blood-and-soil-rooted gardens.

Similarly, a team of Saxon botanists militantly equated their fight against foreign plants with the fight of Nazi Germany against other nations, especially "against the plague of Bolshevism." The team demanded "a war of extermination" against *Impatiens parviflora*, a little herb that grows in lightly shaded areas in forests. These professionals regarded *I. parviflora* as a stranger that dared to spread and even

compete with *I. noli tangere*, a similar but larger species that was considered native. Presumably, the stranger endangered the purity of the German landscape, and in their final sentence the botanists extended their claim dramatically: "As with the fight against Bolshevism, our entire occidental culture is at stake, so with the fight against this Mongolian invader, an essential element of this culture, namely, the beauty of our home forest" is at stake.

### Concepts of Natural Garden Design in the United States

The concern that emerged in Germany for a national style of garden was also evident among some U.S. landscape architects. They preferred native plants in their early twentieth-century American garden and landscape designs. Some even believed in the exclusive use of native plants. Such claims in the United States were made most emphatically by Jens Jensen (1860–1951), Wilhelm Miller (1369–1938), and Frank A. Waugh (1869–1943). Here we will discuss Miller's and Jensen's ideas.

In 1915 Wilhelm Miller published a booklet, *The Prairie Spirit in Landscape Gardening*, in which he outlined his idea of a regional garden style that he felt was representative of midwestern landscapes. For him, "the prairie style of landscape gardening is an American mode of design based upon the practical needs of the middle-western people and characterized by preservation of typical western scenery, by restoration of local color, and by repetition of the horizontal line of land or sky which is the strongest feature of prairie scenery." The disciplines that should assist the design of this garden style were systematic botany, state and local history, and ecology. For Miller, ecology was "a new and fascinating branch of botany that deals with plant societies."

Thus not only science and history were incorporated into garden design, but also the sense of a region—the Midwest, not in fact a particularly



In his 'Illinois' Way of Beautifying the Farm, 1914, Miller captioned this photo, "A Woodlot Full of Wild Flowers—No Cows," noting that "The wild blue phlox (*Phlox divaricata*) once carpeted the woodlands of Illinois and tens of thousands of their thrilling blue flowers could be seen in May. They will come back and stay, if you will spend \$2 for enough three-strand wire to inclose an acre."



For porch decoration Miller also recommended another prairie native: "This country home has privacy enough without training the roses up to hide the porch. The object here is to decorate the porch, and this shows what kind of garland you can make with the Illinois or prairie rose (*Rosa setigera*). The bushes in the foreground are rhododendrons, which are impractical for Illinois, but we can get a unique effect by replacing them with Illinois roses. Let most of them make compact bushes to hide the foundation, and train a few to make garlands. Why not a whole porch, now and then, planted exclusively or chiefly with Illinois roses?"

well-defined geographical area, but certainly a large region relative to the size of some European states. With his proposal for a regional garden style for the Midwest, Miller reacted against the garden design that had become popular among wealthy garden owners in the Northeast and that he feared would become the prevailing

style. He complained, for instance, about "great excesses of artificiality, especially in the East, where rich men's gardens are often loaded with globes, cones, pyramids, cubes, and columns of evergreen foliage." Miller wanted the design of gardens to correspond to what he believed were the more modest means of the Midwest.

Like Miller, the American landscape architect Jens Jensen opposed the use of nonnative plants in American parks and gardens and promoted the regional prairie style. To understand Jensen's work, his plea for the use of native plants, and his concept of garden design, we need to consider his ideas about the relationships among people, races, and nature. Jensen believed that ideas about nation, race, and the natural environment are closely interwoven. In an article on the art of landscaping published in 1923 in the German journal *Die Gartenschönheit* (Garden Beauty), Jensen drew a parallel between races and plant species:

Perhaps it may be too restricted to design a landscape picture only by the means of simple indigenous plants. But please consider that it was them amongst whom we grew up, that they taught us a particular language without interruption since the earliest days of our tribe, that they are interwoven with the soul of our race and, indeed, no art of landscape gardening will be called true art and will be able to reflect the soul of a tribal people, if it does not take its means of expression from the environment of these people.

These ideas were further developed in his 1939 book *Siftings*. In drawing a connection between race and landscape, Jensen wrote of "the soul of our native landscape. Nothing can take its place. It is given to us when we are born, and with it we live." With respect to the art of garden design he ruled, "art must come from within and the only source from which the art of landscaping can come is our native landscape. It cannot be imported from foreign shores and be our own." For Jensen, "no plant is more refined than that which belongs. There is no comparison between native plants and those imported from foreign shores

which are, and shall always remain so, novelties." The fact that Jensen himself was born in Denmark and had lived there for more than twenty years, yet could presume to develop the American "Prairie Style," might cast some doubt on the idea of any congenital relationship of humans to particular landscapes.

In 1939, at the high point of National Socialist power in Germany, Jensen wrote a letter to his German colleague Camillo Schneider in Berlin. His letter discussed Alwin Seifert, who as noted above, fully supported National Socialism and was arguing that landscape design in Nazi Germany must stand by the "fate-determined poverty of plants." But where Seifert allowed slightly fewer native plants in a garden, Jensen took a more uncompromising position:

Seifert seems to distinguish between the garden inside an enclosure and the landscape—here he submits to compromise . . . I cannot see how you can compromise on a difference between the garden and its surroundings, then the garden remains a stranger in its own land. To be true to yourself, I mean true to your native landscape is



Both Waugh and Miller used illustrations of Jensen's designs in their books. This is from Waugh's 1917 *The Natural Style in Landscape Gardening*, where he captioned it, "Naturalistic Composition. Back Yard Garden." Elsewhere in his text he wrote, "Certainly he would be a hard theorist and an intolerable puritan who would exclude the common lilac and the homely apple tree from his grounds simply because they are not native to America. It wouldn't be good democratic Americanism, either, for the great bulk of our citizens are derived from foreign stocks."





Miller, again in 1914, presented a photograph of Jensen's Humboldt Park in Chicago, writing: "The people of Chicago have created at great expense the sort of thing every farmer can enjoy for nothing. This prairie river landscape was designed by Jensen, and planted with common Illinois flowers, e.g., swamp rose mallow, blue flag, water-lily, calamus, phlox, etc."

a very fundamental issue—it is to be, or not to be. In the garden you give assent to one idea and outside its boundary to another. Strange things, grotesque things, usually attractive to the novice will creep in and the purity of thoughts in garden making suffers. Freaks are freaks and often bastards—who wants a bastard in the garden, the out of door shrine of your home?

In his return letter, Schneider rejected Jensen's view of the "native landscape" and wrote that, if one agreed with Jensen's point of view, one would have to get rid of all English gardens and would have to switch off all joy in the "foreign" which "would mean a severe impoverishment." Schneider also believed it necessary

to clearly separate the notions of "landscape" and "garden" . . . In a garden one consciously wants to create something completely different from what nature at home can offer which one can enjoy during car rides and hiking tours. Where else would one enjoy what beautiful things we happen to have received from foreign countries?

But Jensen saw this as a failure of intellect.

The garden is a fine barometer by which to judge the intellect of a people. If the garden which is a true expression of the life of a people will not consist of horticultural specimens, rather of a simple arrangement of plants in a harmonious

whole—that is art. The other is science or decoration. It takes a higher intellect to create a garden out of a few plants than of many.

Jensen had clearly indicated how racism was an important motif in his plea for native plants in his 1937 article "Die 'Lichtung'" [The Clearing], published in *Die Gartenkunst*:

The gardens that I created myself shall . . . be in harmony with their landscape environment and the racial characteristics of its inhabitants. They shall express the spirit of America and therefore shall be free of foreign character as far as possible . . . The Latin and the Oriental crept and creeps more and more over our land, coming from the South, which is settled by Latin people, and also from other

centers of mixed masses of immigrants. The Germanic character of our race, of our cities and settlements was overgrown by foreign character. Latin spirit has spoiled a lot and still spoils things every day.

Such ideas about the alleged negative influence of so-called Latin people were clearly in line with the National Socialist agenda. But Jensen was forced to step back from further expression of his racist ideas by correspondence from Harold LeClaire Ickes (1874–1952), the U.S. Secretary of the Interior from 1933 until 1946, who had learned about Jensen's leanings toward anti-Semitism.

In Germany as well as in the United States, a critical discussion of the enthusiasm for native plants often provokes emotionally loaded responses. Two examples might illustrate this. The first one is a series of papers and letters published in the *Landscape Journal* that began in 1992 with our article "Some notes on the mania for native plants in Germany." This article was the starting point for a heated debate in the journal that lasted for several years. The title of one of the responses may indicate the trend, "Natives and Nazis: an imaginary conspiracy in ecological design." The author, professor of



natural systems in the School of Architecture and Planning at the University of New Mexico, began with "Rhododendrons in the gas chambers! Kristallnacht against Kudzu! Gert Gröning and Joachim Wolschke-Bulmahn attempt to link native-plant advocates with Nazism."

The second example is a response to Michael Pollan's article "Against Nativism," published in 1994 by the *New York Times Magazine*, which became the target of highly emotional attacks. William K. Jordan III, for instance, opened his "The Nazi Connection" with this complaint:

Several times in the past few years I have been brought up short by the suggestion that ecological restoration is a form of nativism—the ecological version of the sort of racist policies espoused by the Nazis or the Ku Klux Klan. Like the Nazis and the Klan, restorationists espouse the exclusion and removal of immigrants, and even a program to ensure genetic purity of stock in order to protect the integrity of the native, the true-born, the Blut und Boden. Hence restoration offers a disturbing resemblance in the ecological sphere to policies of nativism, racism, and sexism in the social sphere—so the argument goes.

If there is a future to garden culture and garden design, then new ideas, new concepts for gardens, new plants, and new materials are essential. The history of garden culture provides ample evidence for the multitude of connections among people, politics, design, and plants. Militant calls such as "foreigners out" or, more specifically, "Tear the rhododendrons out" seem not particularly well-considered solutions to what are called ecological problems. Such calls transmit reactionary ideas about society as well as nature, the design of gardens, parks, and other open spaces. Rather, a temperate and informed discussion about plants, trees, shrubs, their value, and their significance for design should develop, and for that a look into history may be helpful. There is no need to glorify historical events. Professional development could profit from critical analyses of the work and ideas of predecessors in biology, botany, garden and landscape design.

The Jewish writer Rudolf Borchardt, who was persecuted by the National Socialists, offered an important criticism of doctrinaire advocates of

native-plant use that is still relevant today. He wrote in 1938:

If this kind of garden-owning barbarian became the rule, then neither a gillyflower nor a rosemary, neither a peach tree nor a myrtle sampling nor a tea rose would ever have crossed the Alps. Gardens connect people, time, and latitudes. If these barbarians ruled, the great historic process of acclimatization would never have begun and today we would horticulturally still subsist on acorns . . . The garden of humanity is a huge democracy. It is not the only democracy that such clumsy advocates threaten to dehumanize.

#### Notes

- <sup>1</sup> Stephen Jay Gould's "An Evolutionary Perspective on Strengths, Fallacies, and Confusions in the Concept of Native Plants" was reprinted in *Arnoldia* (1998) 58(1).
- <sup>2</sup> In a statement shortly before the First World War, Lange claimed that scientific progress would influence garden design: "Today we have a natural science that is based on the history of development. It teaches us, as far as the interrelations between creatures with their homeland and their fellow creatures are concerned, to understand the laws of life. Biology penetrates all previous knowledge, which was only superficial. Biology, applied to art, establishes a new, a biological aesthetic" (*The Garden and Its Planting*, 1913).
- <sup>3</sup> The source of all references to Jens Jensen's correspondence is the Jens Jensen Collection, Sterling Morton Library, Lisle, Illinois.
- <sup>4</sup> Nevertheless, it must be mentioned that Lange and other landscape architects who promoted ideas about natural garden design created formal gardens also and often used foreign plants. In particular, Lange recommended foreign plants that he believed matched the native plant associations physiognomically and that would heighten the artistic effect of native plant associations.
- <sup>5</sup> For various attempts to connect garden architecture and national identity in the nineteenth and twentieth centuries, see G. Gröning & U. Schneider, *Garden Culture and National Identity*, 2001.

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Gert Gröning is professor of garden culture and open space development at the Institute for History and Theory of Design, University of the Arts Berlin. Joachim Wolschke-Bulmahn is a professor at the Institute for Planning and Garden Architecture, University of Hannover. "The Native Plant Enthusiasm" was originally published in *Landscape Research* ([www.tandf.co.uk/journals/carfax/01426397.html](http://www.tandf.co.uk/journals/carfax/01426397.html)) vol. 28, no. 1 (2003), where a comprehensive set of notes and references are provided.

# *Parthenocissus tricuspidata* 'Fenway Park'

Peter Del Tredici

**T**he 'Fenway Park' cultivar of Boston ivy (*Parthenocissus tricuspidata*) is unique in producing yellow-green foliage throughout the growing season. It originated from a mutant branch on a normal specimen of Boston ivy that was growing on the west-facing wall of an apartment complex a few blocks from Fenway Park, in Boston, Massachusetts. I discovered the plant one evening in September of 1988 while walking to a Red Sox baseball game with my son. The sun was just setting and the upper portions of the ivy-covered building seemed to glow in the fading light. Looking more closely, I saw that the upper portions of the vine—mostly green elsewhere—had bright yellow leaves. A few weeks later I returned to the site, and with the cooperation of the building's superintendent I collected eighty-one cuttings from the yellow portion of the plant, which appeared to be a "bud-sport" mutation on what was otherwise a typical Boston ivy. The sport had originated at the level of the third story and eventually produced a branch that covered the entire right-hand corner of the building. (The entire plant—yellow sport and all—was removed from the building in the late 1990s.)

I took the cuttings of the yellow sport to the Arboretum, where they were accessioned under the number 865-88, treated with a powdered rooting hormone, and placed under intermittent mist in a heated greenhouse. Only a few of the

eighty-one cuttings rooted over the course of the fall, but they produced enough new growth to provide fifty-seven softwood cuttings on 12 January 1989. After being treated with rooting powder and placed under a polyethylene tent, most of these cuttings generated new roots within a few weeks. This is a typical pattern for



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many plants in which the "mature" cuttings taken from the original plant root slowly and in low percentages, while second-generation "juvenile" cuttings root quickly and in high percentages.

The name 'Fenway Park' was assigned to the plant on 23 August 1991 after John F. Donovan, Executive Vice President and Counsel for the Boston Red Sox, granted the Arboretum permission to "use the name 'Fenway Park' in conjunction with commercialization of the plant." By the spring of 1992 we had produced over a thousand containerized plants of 'Fenway Park' and distributed them to a number of nurseries for evaluation and further propagation. Despite this distribution, the plant remained more or less invisible to the gardening public until 1997–1998, when it was finally listed in a few mail-order nursery catalogs. It hit the big time in the fall of 2002, when it appeared with a color illustration in the *Wayside Gardens* catalog. In spring 2003, Plant Delights owner Tony Avent referred to it as "the top conversation piece in our garden." 'Fenway Park' was formally described in 1998 in the *Combined Proceedings of the International Plant Propagators Society* 48: 658–659.

The most salient characteristic of 'Fenway Park' is the color of its leaves during the growing season, which can vary from yellow to chartreuse depending on the amount of light the plant receives. When grown in full sun, the color comes close to the Royal Horticultural Society (RHS) yellow-green 151A to C; in shade, it is a uniform lime green (RHS 154C to D). This coloration has remained stable throughout the fifteen years that 'Fenway Park' has been propagated. In the fall, the plant's foliage turns brilliant shades of orange, scarlet, and yellow, which is typical of the species.

The distal portion of the oldest leaves of 'Fenway Park' may lose all their chlorophyll, making them susceptible to sunscald, especially during hot, dry summers. For this reason, the plant is best grown on a north- or west-facing wall. 'Fenway Park' is hardy within USDA hardiness zones 4 through 9 and is often used as a climbing vine to brighten up walls, fences, or buildings that are located in dark, shady places.

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